WHAT IS CLAIMED IS:

1. A three-dimensional imaging device comprising:

a) a micromirror array lens;

b) an imaging unit on which an image of the object at a given focal length of the micromirror array lens is formed; and

c) an image processing unit processing the image on the imaging unit to produce a two-dimensional image at the given focal length;

2. The three-dimensional imaging device of claim 1, wherein the focal plane of the three-dimensional imaging device is changed by change of focal length of the micromirror array lens.

3. The three-dimensional imaging device of claim 1, wherein the imaging unit comprises one or more two-dimensional image sensor taking the two-dimensional image at each focal plane.

4. The three-dimensional imaging device of claim 1, the image processing unit generates all-in-focus image and depth information for the all-in-focus image from the two-dimensional images, wherein all the processes are

achieved within a unit time which is less than or equal to the afterimage time of the human eye.

5. The three-dimensional imaging device of claim 1, wherein the micromirror array lens comprises a plurality of micromirrors.

6. The three-dimensional imaging device of claim 5, wherein each of the micromirrors is controlled to change the focal length of the micromirror array lens.

7. The three-dimensional imaging device of claim 5, wherein the translational motion of each of the micromirrors is controlled.

8. The three-dimensional imaging device of claim 5, wherein the rotational motion of each of the micromirrors is controlled.

9. The three-dimensional imaging device of claim 5, wherein the rotational motion and the translational motion of each of the micromirrors are controlled.

10. The three-dimensional imaging device of claim 5, wherein the micromirrors are arranged to form one or more concentric circles.

11. The three-dimensional imaging device of claim 5, wherein each micromirror of the micromirror array lens has a fan shape.

12. The three-dimensional imaging device of claim 5, wherein the reflective surface of each micromirror of the micromirror array lens is substantially flat.

13. The three-dimensional imaging device of claim 5, wherein the reflective surface of each micromirror of the micromirror array lens has a curvature.

14. The three-dimensional imaging device of claim 13, wherein the curvature is controlled.

15. The three-dimensional imaging device of claim 5, wherein each micromirror of the micromirror array lens is actuated by electrostatic force.

16. The three-dimensional imaging device of claim 5,

wherein each micromirror of the micromirror array lens is actuated by electromagnetic force.

17. The three-dimensional imaging device of claim 5, wherein each micromirror of the micromirror array lens is actuated by electrostatic force and electromagnetic force.

18. The three-dimensional imaging device of claim 5, wherein the reflective surface of each of the micromirrors is made of metal.

19. The three-dimensional imaging device of claim 5, wherein the micromirrors are arranged in a flat plane.

20. The three-dimensional imaging device of claim 1, wherein the micromirror array lens further comprises a plurality of mechanical structures upholding the micromirrors and actuating components actuating the micromirrors, wherein the mechanical structure and the actuating components are located under the micromirrors.

21. The three-dimensional imaging device of claim 1, wherein the micromirror array lens is a reflective Fresnel lens.

22. The three-dimensional imaging device of claim 1, wherein the micromirror array lens is an adaptive optical component, wherein the micromirror array lens compensates for phase errors of light introduced by the medium between an object and its image.

23. The three-dimensional imaging device of claim 1, wherein the micromirror array lens is an adaptive optical component, wherein the micromirror array lens corrects aberrations.

24. The three-dimensional imaging device of claim 1, wherein the micromirror array lens is an adaptive optical component, wherein the micromiror array lens corrects the defects of the three-dimensional imaging system that cause the image to deviate from the rules of paraxial imagery.

25. The three-dimensional imaging device of claim 1, wherein the micromirror array lens is an adaptive

optical component, wherein an object which does not lie on the optical axis can be imaged by the micromirror array lens without macroscopic mechanical movement.

26. The three-dimensional imaging device of claim 1, wherein the micromirror array lens is controlled to satisfy the same phase condition for each wavelength of Red, Green, and Blue (RGB), respectively, to get a color image.

27. The three-dimensional imaging device of claim 26, further comprising a plurality of bandpass filters.

28. The three-dimensional imaging device of claim 26, further comprising photoelectric sensors, wherein the photoelectric sensors comprises Red, Green, and Blue (RGB) sensors, wherein color images are obtained by treatments of electrical signals from the Red, Green, and Blue (RGB) sensors.

29. The three-dimensional imaging device of claim 28, wherein the treatment of electrical signals from the Red, Green and Blue (RGB) sensors is synchronized

and/or matched with the control of the micromirror array lens to satisfy the same phase condition for each wavelength of Red, Green and Blue (RGB), respectively.

30. The three-dimensional imaging device of claim 1, further comprising a beam splitter positioned in the path of light between the imaging unit and the micromirror array lens.

31. The three-dimensional imaging device of claim 1, wherein the micromirror array lens is positioned so that the path of the light reflected by the micromirror array lens is not blocked.

32. The three-dimensional imaging device of claim 1, further comprising one or more auxiliary lenses having a predetermined focal length, and wherein the effective focal length of the imaging system is determined by the micromirror array lens and the auxiliary lens together.

33. The three-dimensional imaging device of claim 1, further comprising one or more auxiliary lenses having

a predetermined focal length, and wherein the numerical aperture of the imaging system is increased by the auxiliary lens.